PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

SAMPLE PAPER-1 (SOLVED)

Mcqs

1. When the current changes from + 2A to -2A in 0.05 s, an emf of 8 V is induced in a coil is

co-efficient of self-induction of the coil is

A. 0.2 H

B. 0.4 H

C. 0.8 H

D. 0.1 H

Answer:

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2. If λ_v, λ_x, and $\lambda_m$represent the wavelengths of visible light, X-rays and microwaves respectively, then:

A. $\lambda_m > \lambda_v > \lambda_x$

B. $\lambda_m > \lambda_x > \lambda_v$

C. $\lambda_v > \lambda_m > \lambda_x$

D. $\lambda v > \lambda x > \lambda m$

Answer:

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3. The materials used in Robotics are

A. Aluminium and silver

B. Silver and gold

C. Copper and gold

D. Steel and aluminium

Answer:

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4. Two wires of A and B with cirular cross section made up of the same material with equal lengths.Suppose $R_A = 3R_B$, then what is the ratio of radius of wire A to that of B ?

A. 3

B. $\sqrt{3}$

C. $\frac{1}{\sqrt{3}}$

D. $\frac{1}{3}$

Answer:

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5. The frequency range of 3 MHz to 30 MHz is used for

A. Ground wave propagation

B. Space wave propagation

C. Sky wave propagation

D. Satellite communication

Answer:

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6. A ray of light strikes a glass plate at an angle 60° . If the reflected and refracted rays are perpendicular to each other, the refractive index of the glass is,

A. $\sqrt{3}$

B. $\frac{3}{2}$

C. $\sqrt{\frac{3}{2}}$

D. 2

Answer:

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7. If voltage applied on a capacitor is increased from V to 2V:

A. Q remains the same, C is doubled

B. Q is doubled,C doubled

C. C remains same, Q doubled

D. Both Q and C remain same

Answer:

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8. The nucleus is approximately spherical in shape. Then the surface area of nucleus haviing mass number A varies as.

A. $A^{2/3}$

B. $A^{4/3}$

C. $A^{1/3}$

D. $A^{5/3}$

Answer:

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9. The given electrical network is equivalent to:

A. AND gate

B. OR gate

C. NOR gate

D. NOT gate

Answer:

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10. A wire of length l carries a current I along the Y direction and magnetic field is given by $\vec{B} = \frac{\beta}{\sqrt{3}}\left(\hat{I} + \hat{j} + \hat{k}\right)T$. The magnitude of Lorentz force acting on the wire is

A. $\sqrt{\frac{2}{\sqrt{3}}}\beta Il$

B. $\sqrt{\frac{1}{\sqrt{3}}}\beta Il$

C. $\sqrt{2}\beta Il$

D. $\sqrt{\frac{1}{2}}\beta Il$

Answer:

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11. When a point charge of $6\mu C$ is moved between two points in an electric field, the work done is $1.8 \times 10^{-5} J$. The potential difference between the two points is :

A. 1.08 V

B. $1.08\mu V$

C. 3V

D. 30V

Answer:

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12. The wavelength λ_e of an electron and λ_p of a photon of same energy E are related by

A. $\lambda_p \propto \lambda_e$

B. $\lambda_p \propto \sqrt{\lambda_e}$

C. $\lambda_p \propto \frac{1}{\sqrt{\lambda_e}}$

D. $\lambda_p \propto \lambda_e^2$

Answer:

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13. In a myopic eye, the image of the object is formed

A. convex lens

B. concave lens

C. cylindrical lens

D. plane glass

Answer:

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14. In a T.G. experiment , for two different values of current , the deflections are 45° and 30° respectively , then the ratio of the current is

A. $2:3$

B. $3:2$

C. $\sqrt{3}:1$

D. $1:\sqrt{3}$

Answer:

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15. If the current gain α of a transistor is 0.98, what is the value of β of the trnasistor ?

A. 0.49

B. 49

C. 4.9

D. 5

Answer:

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Questions

1. What is meant by Fraunhofer lines?

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2. Why steel is preferred in making Robot?

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3. State Lenz's law.

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4. Why do clouds appear white?

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5. Calculate the radius of_{79}^{197} Au.

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6. Explain the need for a feedback circuit in a transistor oscillator.

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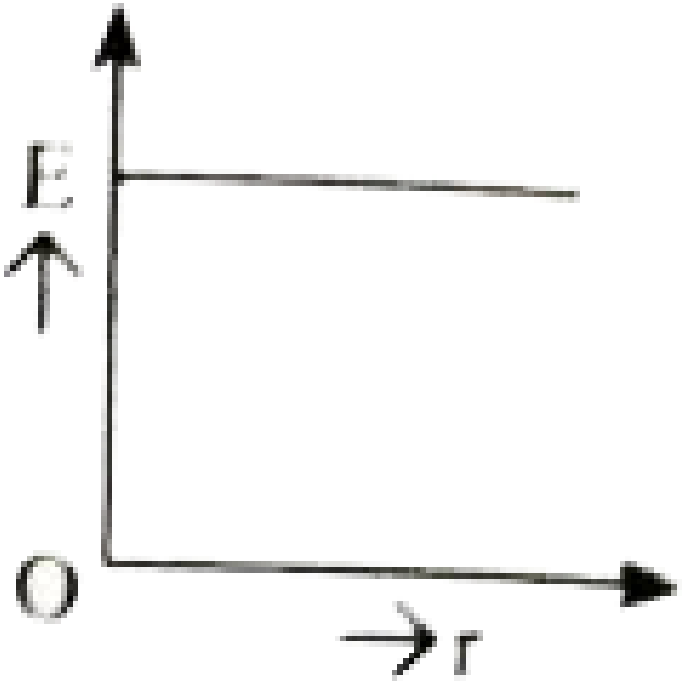
7. Show graphically the variation of electric field E (y-axis) due to a charged infinite plane sheet with distance r (x-axis) from the plate.



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8. Write the applications of internet.

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9. Calculate the magnetic field inside a solenoid when the number of turns is halved and length of the solenoid and the area remain the same.

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10. Two cells each of 5V are connected in series across a 8Ω resistor and three parallel resistors of $4\Omega, 6\Omega \text{ and } 12\Omega$. Draw a circuit diagram for the above arrangement. Calculate (i) the current drawn fron the cell (ii) current through each resistor.

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11. Write a note on transformer.

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12. Discuss the alpha decay process with example.

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13. Obtain the expression for the energy stored in a parallel plate capacitor.

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14. Explain any three recent advancements in medical technology.

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15. Two light sources with amplitudes 5 units and 3 units respectively interfere with each other. Calculate the ratio of maximum and minimum intensities.

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16. An electron moves in a circular orbit with a uniform speed v. It produces a magnetic field B at the centre of the circle. Prove that the radius of the circle is proportional to $\sqrt{\frac{V}{B}}$.

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17. Give the construction and working of photo emissive cell.

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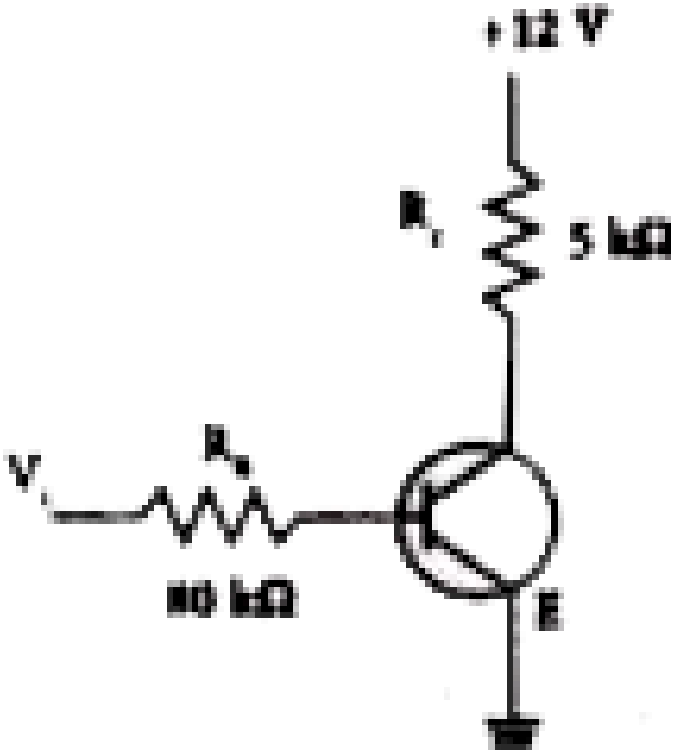
18. In the circuit shown in the figure, the input voltage $V_i = +5V, V_{BE} = +0.8V$ and $V_{CE} = +0.12V$. Find the values of $I_B I_C$ and β.



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19. Obtain the expression for electric field due to an uniformly charge spherical shell.

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20. Write any five properties of electromagnetic waves.

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21. What is modulation? Explain the types of modulation with necessary diagrams.

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22. Find the expression for the mutual inductance between a pair of coils and show that $(M_{12} = M_{21})$.

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23. Derive the expression for the radius of the orbit of the electron and its velocity using Bohr atom model.

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24. Discuss the working of cyclotron in detail.

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25. Obtain lens maker's formula and medium its signification. Lens maker's formula and lens equation:

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26. Explain the construction and working of a full wave rectifier.

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27. An electron is accelerated through a potential difference of 81V. What is the de Broglie wavelength associated with it? To which part of electromagnetic spectrum does this wavelength corresspond ?

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28. A cell supplies a current of 0.9 A through a 1Ω resistor and a current of 0.3 A through a

2Ω resistor. Calculate the internal resistance of the cell.

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